Daily Report

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Intro

This week the progress of the Visual SVM project was quite slow for there were some troubles with planes, bounding boxes and interpretation of the result in 3-D view.

Research

Visual SVM

A hexahedral with curved surface is shown in Figure 1, 2 and 3. It is a 3-D cube with 8 vertices contained in the 4-dimensional hypercube with the first dimension fixed and other 3 dimension sliced into 10 pieces, which has $11^3 = 1331$ sample points in total. The large red spheres are vertices of the hexahedral involved in this 3-D cube. When the first dimension changes, there will be a slight shift and deformation of the whole hexahedral.

The closed shape of mapped hypercube still needs more interpretation, or just regard it as an affiliated representation.

Plans for Tomorrow

- Implement the Tour method for the Radviz view, and try to connect the interactions with the 3-D view. The Tour method[1, 2] is used for rearranging weights and positions of anchor points in order to change the distribution of the points.
- Design a analysis pipeline.

References

[1] D. Caragea, D. Cook, and V. G. Honavar, "Gaining insights into support vector machine pattern classifiers using projection-based tour methods," in *KDD '01: Proceedings of the seventh ACM SIGKDD international conference on Knowledge discovery and data mining*, ACM Request Permissions, Aug. 2001.

[2] "Visual Methods for Examining SVM Classifiers," pp. 1–19, Feb. 2007.

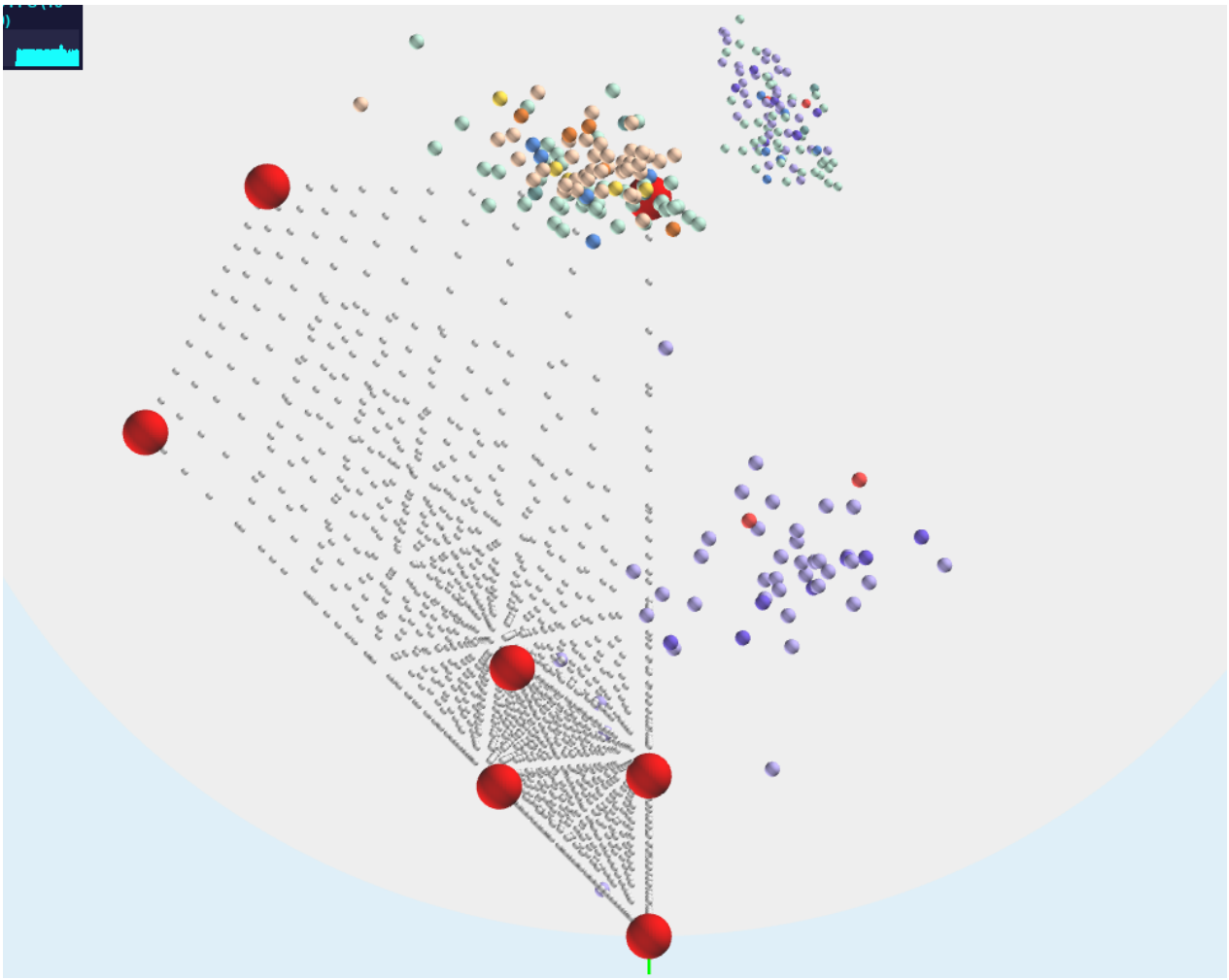

Figure 1: The bird's-eye view.

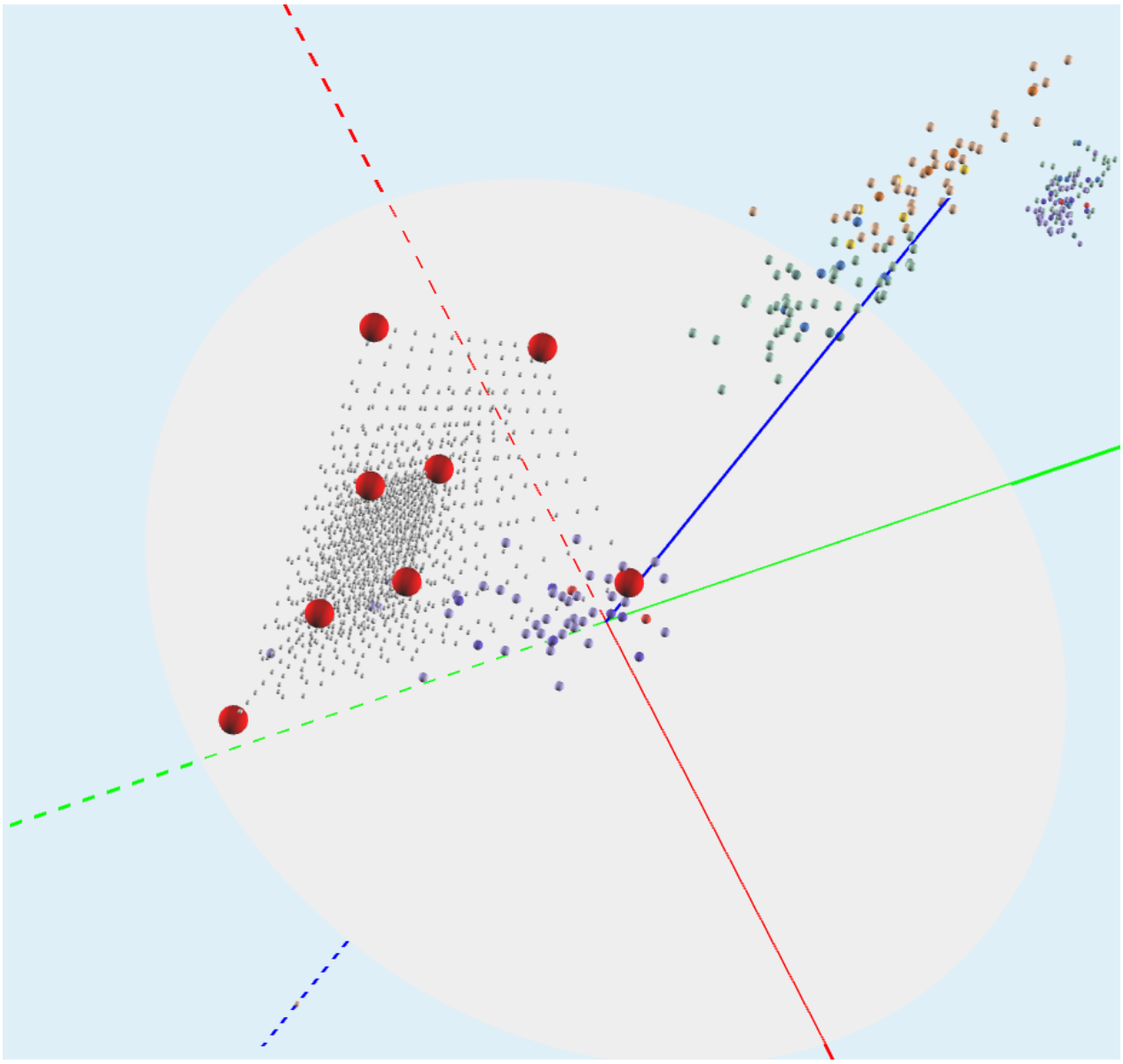

Figure 2: An overview of the hexahedral.

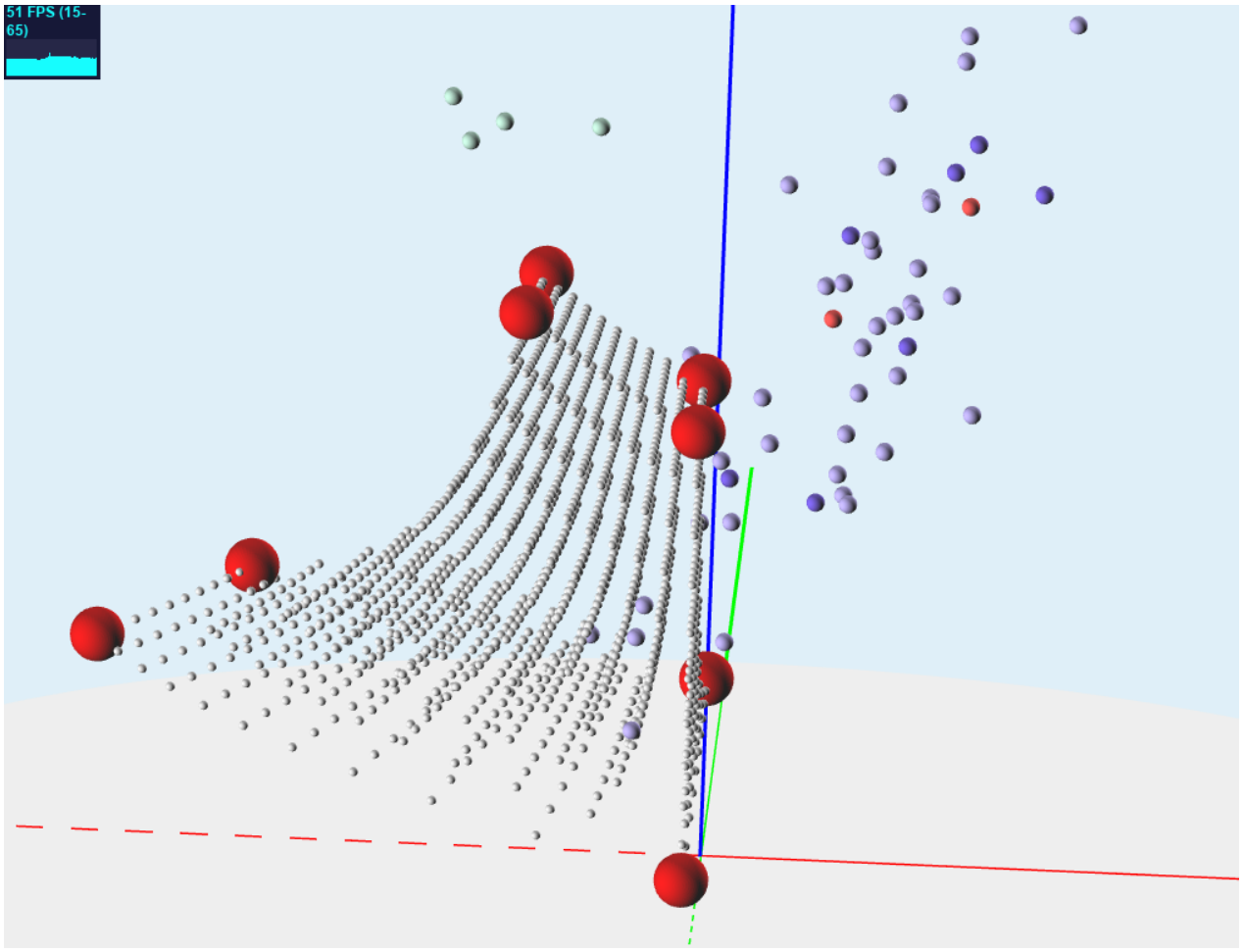

Figure 3: One side of the hexahedral.